The Social Construction of Successful Market Reforms

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The Social Construction of Successful Market Reforms

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Abstract

The transition from socialism to capitalism has spawned a large literature on comparative policy reforms. While many sociologists using qualitative data have concluded that neo-liberal reforms led to negative outcomes, a large body of cross-national literature, mostly from economics and political science, claims that more neo-liberal reforms produced better economic and political outcomes. These latter studies almost all use measures of policy reform constructed by economists at the European Bank for Reconstruction and Development (EBRD). We show, using the EBRD's own data, that their indices of progress in market reforms are biased in the direction of positive growth. That is, the EBRD's bureaucracy over-codes the more successful countries. When one accounts for this bias, the relationship between the EBRD's transition indicators and growth significantly weakens or disappears. These findings have implications for social scientific research using statistics constructed by international organizations, like the World Bank and the IMF.

Introduction

Cross-national analysis relying on policy indices created by international policy institutions, such as the World Bank, Heritage Foundation and Freedom House, have become mainstream in macro-analysis in sociology, political science and economics. These statistics crucially inform debates about the appropriate policies for promoting economic and political development, including those on property rights (Acemoglu et al 2001; Levine 2005), corruption (Mauro 1995; Mo 2001; Barro 1991), governance (Kaufmann et al 2003) and democracy (Lee 2005; Paxton 2002; Wejnert 2005; Rodrik and Wacziarg 2004; Ross 2006). Yet, as sociologists, we recognize the intimate relation between power and knowledge (Foucault 1980) and the universal, but hidden, possibility that those who construct these statistics could introduce bias in the direction of power, which could greatly affect the outcomes being studied.

Although previous work has questioned the validity of some policy indices as analytical constructs (Kurtz and Schrank 2007) and their potential for measuring underlying government choices rather than just the actual policy (Rodrik 2005), to our knowledge no study has successfully tested for bias *per se* in their construction (i.e., in the statistic-generating process). What has restricted previous efforts has been the lack of 'gold-standard', or actual data on policy implementation for comparison with the codings by the policy institutions. Usually, because these institutions have the advantage of greater access to the data, and in many cases a complete monopoly on the resources for research, any policy data underlying the statistics are often not easily reproducible or kept secret (e.g., World Bank Governance Indicators or IMF Index of Conditionality Implementation).

Both methodologically and substantively, we plan to assess this potential for bias in the statistics produced by international financial institutions (IFIs) on one of the most profound economic experiments of our time: the transitions from state-socialism to capitalism in eastern Europe during the 1990's. At no other period in modern history have so many radical and widely contested economic reforms been imposed so quickly on societies. From the outset of transition, intellectuals agreed upon the need for reform but disputed the appropriate pace and scale of liberalization (the "Shock Therapy versus Gradualism" debate) (Sachs 1990; Stiglitz 1999). IFIs, particularly the World Bank and IMF, played crucial roles in both legitimating and evaluating the neo-liberal 'Shock Therapy' platform (Wedel 2001; Gowan 1999). As

the principal monitors and evaluators of transition policies, these institutions could be considered "global knowledge agencies", to emphasize their roles in producing knowledge for policymakers and academics (Toye and Toye 2005).

One of the most important knowledge agencies during transition was the European Bank for Reconstruction and Development (EBRD), a bank established to support ex-communist countries administratively and financially during transition. Since 1994, the EBRD has constructed an annual *Transition Indicator* database to "provide an understanding of how, why and by what means transition policies have related to economic growth and social development" (EBRD 1994: 9). These statistics – the 'ultimate' documents for studying transition (Dejak 2005: 49) – have been used by many prominent social scientists, including Åslund (2007), Fischer (2000), Lane (2006), Sachs (1996), and Stiglitz (2006).

Most quantitative analysis, drawing heavily upon the EBRD's *Transition Indicator* statistics[1], has identified positive effects of the rapid approach (e.g., Sachs 1996; Fischer and Sahay 2000; de Melo et al 1996). Yet, a large body of work by global ethnographers and qualitative researchers has consistently found negative outcomes in connection with these policies (e.g., Burawoy 2000; Southworth 2004). These conflicting findings between the qualitative and quantitative methods remain unresolved (Popov 2000; Popov 2007).

Could part of the differences in findings between methods be a result of bias in the statistics used in these quantitative analyses? Or, are the reform indexes constructed by the EBRD biased? Indeed, as advisors, financers and surveyors of market reforms, the EBRD's bureaucracy had both incentives and ample opportunities for self-fulfilling codings.[2]

The EBRD's coverage of transition policies offers a rare opportunity to measure this potential bias. It has produced, alongside its *Transition Indicator* dataset, a *Transition Report* text series. These detailed texts, released annually, contain

[1] Virtually every large cross-national analysis of transition has relied upon the statistics produced by the EBRD for measuring progress in market reform.

[2] First, the EBRD's conflicting roles as both advisor and evaluator create incentives for their analysts to factor economic growth into their measures of the implementation of their preferred policies. Self-fulfilling codings would be possible because the construction of statistics takes place after country performance has been observed, as Merlevede and Schoors (2004) point out. Secondly, the EBRD promotes a particular ideology, representing a neo-liberal version of contemporary capitalism, that emphasizes deregulation and privatization. This disposition might also create unconscious ideological bias among officers of the EBRD bureaucracy.

extensive quantitative information on actual progress in transition policies for 29 ex-communist countries. In this study, we have compiled a 'gold-standard' dataset on transition policies from the quantitative data reported in the text of the EBRD's transition reports. We then tested for systematic deviations between these actual data and the statistics constructed by EBRD's bureaucracy.

The rest of this article is as follows: In the first two sections, we briefly review the social and intellectual context of transition as well as the few existing studies that have attempted to evaluate potential bias in the statistics produced by IFIs. In the third section, we describe how we collected our 'gold-standard' data for assessing bias in the EBRD's statistics. In the fourth section we show the results of several diagnostic tests of deviations between actual data on reform and the statistics constructed by the EBRD. In the fifth we re-visit the analysis of transition policies on economic growth, after correcting for potential coding biases. We conclude by noting the limitations of this work, but by arguing that it has implications for the unresolved "Shock Therapy versus Gradualism" debate and more generally for studies relying upon statistics constructed by IFIs and other policy institutions, such as the World Bank, IMF, and the Heritage Foundation.

Social and Intellectual Context of Transition Reforms

A small group of neo-liberal economists at a handful of major research universities and within the EBRD, IMF and World Bank provided both intellectual guidance and legitimacy for politicians pushing neoliberal transition policies. These neo-liberals argued that a successful transition to capitalism from communism required three sets of policies to be undertaken as rapidly as possible: mass privatization, liberalization of prices and trade, and stabilization programmes. If these policies were not extensively and rapidly undertaken, it was argued, capitalism might never be successfully reached, which risked a return to state socialism (Åslund 2007). In the short-run, these reforms were predicted to be painful for Soviet workers and managers, but in the long-run they were argued to boost economic growth and lead to convergence with western capitalist economies.

Given these social and intellectual stakes, and the disastrous outcomes that were already apparent already in the early 1990's, the EBRD faced clear incentives to classify the more successful countries as having achieved faster progress in

implementing the controversial neoliberal reforms. But if the EBRD's bureaucracy was biased, and this bias worked its way into the statistics, how would we know?

Evaluating Bias in the Statistics Produced by Global Knowledge Agencies

The few existing studies that have attempted to investigate the possibility that International Financial Institutions (IFI) 'build success' into their statistics and analysis have centred on the World Bank. Banerjee et al (2006) assessed the work of the World Bank over a twenty year period and noted that research methods were often used without adequate rigor, and economic models were simply 'tinkered with' to provide justification for World Bank policies. More recent work by Kurtz and Schrank (2007) evaluated the World Bank's coding of 'good governance' by exploiting the time-dimension in their data. Using granger-style causality tests, they investigated whether higher governance scores preceded or followed the Bank's desired economic outcomes. Kurtz and Schrank found weak support for the notion that better governance, as measured by the World Bank, was connected with successive improvements in growth. Instead, they found that the perception-based codings of policies were biased by 'halo effects' of prior growth, such that greater past growth correlated significantly with higher governance ratings in future periods but higher past governance ratings were uncorrelated with successive growth.

The postcommunist economies provide a rare opportunity for testing the potential for bias in the basic statistical measures developed for evaluating policy success and failure. The EBRD constructed a set of measures of progress in market policies on the basis of a raw set of transition policy data. By closely reviewing the pieces of raw data reported in the EBRD's *Transition Report* series and World Bank Europe and Central Asia privatization database, we have been able to compare the data on progress in market reform, which were available to the EBRD at the time of coding, with their constructed statistics, which are relied upon by the rest of the intellectual community. Therefore, despite the usual monopoly by IFIs on information faced by academics, we have been able to evaluate the relationship between the underlying economic data and the codings of economic progress produced by the EBRD.

Data and Methods

Our analysis of the potential bias in the EBRD statistics focuses on the two most crucial economic reforms: privatization and liberalization. [3] The EBRD has constructed four indices measuring progress in these areas for twenty nine postcommunist countries: a small-scale index privatization, a large-scale index of privatization, a price liberalization index, and a foreign exchange and trade liberalization index. These indices scale from 1 (planned economy) to 4+ (advanced market economy), and move in increments of approximately 0.3 units (see Table 1 for more details). Of the two liberalisation indices, we focused only on price liberalisation, because index on foreign exchange and trade liberalisation index attempted to collapse two policies into one dimension, and because the relationship between foreign trade liberalization and quantitative measures of such liberalization, like average tariff levels, was much lower (r=.33?).This could also be due to the difficulty in quantifying barriers to trade.

[Table 1 about here]

These indices explicitly include subjective judgements about progress in transition by the EBRD staff (EBRD 1996; EBRD 2007)[4]: "Transition indicator scores reflect the judgment of the EBRD's Office of the Chief Economist about country-specific progress in transition." (EBRD 2009). Analysts at the EBRD note further that "the hardest conceptual issues concern the definition and measurement of reform. Any attempt to assign numbers to a country's progress in transition is inherently difficult and carries a large degree of subjectivity" (Falcetti, Lysenko and Sanfey 2005: 6).

The EBRD codings of progress in reform could thus be decomposed into three parts: actual progress in market policies, subjective bias, and measurement error.

To measure "actual progress in market policies", we have compiled the data sources available to the EBRD by compiling the data published in their *Transition Report Series*. This 'gold standard' dataset allows us to evaluate the validity of the

[3] A third, stabilization programmes, was viewed as necessary to suppress inflationary pressures and ensure markets provided the right information in the form of stable prices. However, specific indices for this policy are not included in the *Transition Indicator* statistical database.

[4] In personal communication with an EBRD economist, we were told on occasion a team of analysts would sit down with the economic data to discuss country progress in implementing market reforms and then decide the appropriate coding.

EBRD indices.[5] To improve our sample size, we have enriched our set with data from the World Bank's Europe and Central Asia Privatization Database and country-specific sources, which were available to the EBRD when constructing their statistics (see Appendix 1 for all sources). None of our basic results was affected by this step. Table 2 presents summary statistics of our dataset.

[Table 2 about here]

As sceptical observers, we might ask ourselves: what if we, too, may have incorporated subjective bias in our statistics? We collected only the quantitative data that would have also been available to the EBRD at the time of coding the indices, and the majority of the data is directly taken from EBRD sources that were published in the *Transition Report* series alongside the *Transition Indicator* database. Any bias in our data would thus only reproduce the biases in the existing data on policy implementation.[6] This feature of our data enables us to distinguish the potential biases introduced by the EBRD's bureaucracy from those introduced in reports from government agencies to the EBRD.

If there were no systematic bias in the EBRD's construction of statistics, any differences between the EBRD's coding of the policy and the underlying policy data should register as random measurement error. Thus, in a simple model regressing the EBRD policy on the underlying policy data, or EBRD Policy Index = βActual Policy Outcome + ε, we should find that the measurement error, or ε, should be normally distributed and vary similarly across the actual progress in market reforms.

Hypothesis #1: Differences between EBRD coding of market reforms and actual reforms are random

Conditional on rejecting hypothesis #1, we tested whether factors relevant to the EBRD, such as growth in economic output, might explain why some countries were over- or under-coded.

[5] As one of many possible examples, in describing Armenia's progress in privatization, the country assessments in the EBRD *Transition Report* series notes: 1994: large-scale privatization begins; 1995: 1,100 medium- and large-scale (MLSE) enterprises were converted to joint stock companies in 1995. 1996: a further 626 MSLE firms were privatized. 1997: 88.4% of all firms had been privatized, with an additional 650 expected to be privatized by the end of the year.

[6] Only one source of measurement error should exist between the EBRD's *Transition Indicator* statistics and the data reported in the *Transition Report* texts. The EBRD staff backdated a very small number of their codings in the *Transition Indicator* series in cases when more accurate information was subsequently released.

Hypothesis #2: EBRD is more likely to code progress in market reform as greater than it actually is when the economy grows

Results

To what extent is actual progress in market reforms captured in the EBRD's codings? Correlations between the actual policy and EBRD's coded variables were strong for privatization and liberalization (small-scale $r = 0.90$, large-scale $r = 0.87$, price liberalization $r = 0.80$). That is, about 83% of the variations in the EBRD's small-scale privatization index, 76% in the EBRD's large-scale privatization index and 64% in the EBRD's price liberalization index can be explained by the actual policies.[7]

[Figure 1 about here]

Although there is a strong correspondence between the actual and constructed data, the EBRD's scoring criteria appear out of sync with their corresponding policy values. As shown in Table 3, a 3 on the EBRD large-scale privatization index denotes at least 25% of state-owned enterprise assets privatized and a 4 denotes at least 50% privatized. Yet, figure 1, plotting the average relationship between the EBRD indices and actual progress in reform, reveals a 3 corresponds to a 62.5% privatized on average, when such progress should, on average, have met the criteria for a 4 scoring. Large variations occur across these codings: Armenia in 1998 and Moldova in 1997 had privatized 70% and 66% of their large-state owned enterprise assets, which should have qualified as a 4, yet the EBRD coded them both as a 3. On the other hand, Macedonia had only reached about 20% in 1996 and Poland less than 15% in 1994, but these countries were both coded as a 3.

[Table 3 about here]

For price liberalization, an unusual situation occurred where the EBRD claimed little or no progress had been made in moving from a 'planned economy' to a 'market economy' in their *Transition Report*, when their *Transition Indicators* showed the opposite (see Appendix 2). In 2003, Ukraine had state controls remaining on 6 out of 15 goods in the EBRD's basket for post-Soviet economies. This was

[7] The EBRD's constructed indices poorly reflected year-to-year progress in economic reform. When evaluating the first-differences versions of these variables, the R^2 drop to 0.36 for small-scale privatization, 0.13for large-scale privatization and 0.16 for price liberalization.

assigned a score of a 4 on the EBRD price liberalization index, or the standard of an advanced market economy. Ukraine's neighbouring country Belarus, on the other hand, which was criticized by some for being exceptionally slow – "a Soviet theme park" (Åslund 2001) –had state controls on only four out of 15 of these goods but was given a 2.7 score.

Such coding discrepancies lead to confusion which manifests in, for example, the debates among policy advisors about which countries have followed their policy advice. The debate has been most heated for comparing Russia and Poland. Was Russia, a relatively disastrous case, or Poland, a more successful country, the archetype of the rapid approach to market reforms (so-called "Shock Therapy")?

The EBRD indices provide little help in resolving this debate. For example, on large-scale privatization, arguably the most controversial transition policy, according to the EBRD *Transition Indicator* data, these countries were nearly indistinguishable with regard to their progress. By 1994, both Russia and Poland had a coding of 3, and by 1997, these countries advanced to a 3.3.

But the actual policy data reported in the text of the EBRD *Transition Report* series reveal a clearer picture of the paths taken. By 1994, Poland had privatized less than 15% of their large-scale state owned firms, falling just below the threshold for a 3 in the EBRD index. Russia had privatized roughly three-quarters of their large state-owned enterprise assets, which should have far exceeded the EBRD's criteria for a 4. Yet, the EBRD gave both countries the same score of 3. Between 1996 and 1997, Poland gained another 0.3 points when the country had privatized 45% of large state enterprises. Russia by this point had transferred almost all state enterprise assets to private owners, but was again assigned the same score as Poland.

Diagnostic Tests of Coding Errors

Are these discrepancies between actual policy and the EBRD's constructed statistics random mistakes?

We tested whether the differences between the underlying data on actual progress in market reforms and their associated scoring on the EBRD index was consistent with random measurement error. Two quantitative criteria of random errors were assessed: that the errors were normally distributed and that their variability was constant.

To test whether the deviations between actual policy and the EBRD codings in our basic models appeared to be random, we analyzed residual plots and applied standard quantitative methods, a Shapiro-Wilk test for normality and a Breusch-Pagan test for constant variance. In all cases, the quantitative tests strongly reject the normality ($p<0.001$) and constant variance ($p<0.001$) of these discrepancies, which were consistent findings with those graphically depicted in the residual plots (see Appendix 3).

Ruling out that the EBRD's coding errors were not simply random does not prove subjective bias, but it does provide further evidence that EBRD's process of measuring progress in market reforms was markedly inconsistent.

Determinants of Coding Errors

Next we tested whether these discrepancies were systematic. That is, could the errors be explained by factors other than the EBRD's criteria? Because the EBRD's principal measure of success was economic growth, we evaluated the relationship between the coding deviations and several measures of economic performance.

[Table 4 about here]

Table 4 shows the results of fifteen regressions of the residual of the basic model on multiple measures of economic performance. While not all measures of economic performance were statistically significant predictors of over- or under-coding, faster growing economies generally received higher scores of progress in privatization. Both Poland and Macedonia, which had their progress in large-scale privatization significantly over-coded, were among the top-5 growth performers. Among the measures of economic we tested, the most important correlate of coding deviations was economic growth in the preceding year.

Robustness Checks

Before proceeding, we performed a series of checks to our specification, sample and explanatory variables. First, we replicated all of our analysis using only within-country changes in the policy variables. None of the results was different, although in some cases the estimated biases were weaker than the models using full-variation, suggesting that the potential bias may have related to analysts picking favourite 'neoliberal' top-performing countries. Second, we deleted potential outlying values based on a conservative cutoff of two standard deviations. Although the

connection between the EBRD indices and the raw policy data improved to $r = 0.84$ for large-scale and $r = 0.95$ for small-scale, the basic issues persisted.

Next, we considered some alternative explanations. We tested whether a country's membership in the former Soviet Union might have been an important factor, which may be indicative of a western bias. We found that the core Soviet countries, such as Russia and Kazakhstan, were coded on average -0.32 points lower (or were 27% more likely to be undercoded) than satellite countries, such as Czech Republic and Hungary, in the EBRD's small-scale privatization index, after holding constant these countries' level of progress in small-scale privatization.

Lastly, we tested reliable data on mortality rates, which Sen (1998) argues is an important alternative measure of economic success and failure and would arguably not have been an explicit factor in the EBRD's analysts' construction of statistics. We found that trends in mortality, measured in a variety of ways (life expectancy at birth for men and women, heart disease mortality rates, suicide rates), had no effect on deviations in coding across countries.

Returning to our hypotheses, we find strong evidence that the deviations between the EBRD's constructed statistics of country progress in market reforms and the underlying data on these reforms are not simply mistakes, or random measurement errors (hypothesis 1). These deviations appear systematic with regard to economic performance (hypothesis 2), the principal measure of success and failure being studied by the EBRD.

Re-evaluating the links between growth and market reform

Does the institutional bias in the construction of statistics have implications for previous analyses of growth and market reform?

We revisited some basic models of the effects on growth of large-scale privatization, the most contentious transition policy and index for which the bias was the greatest. First, we reproduced findings that progress in large-scale privatization is connected with higher growth in real GDP per capita (standard errors in parentheses, n = 108):

(1a) Growth = -9.02 + 3.89 EBRD Large-Scale Privatization,
(3.59) (1.91, $p = 0.045$)

Then, we ran our models using the raw large-scale privatization data:

(1b) Growth = -4.83 + 0.05 Percentage of Large-Scale Firms Privatized
(2.95) (0.07, $p = 0.485$)

Once the institutional bias is removed, the positive growth effect of large-scale privatization disappears. While it is beyond the scope of this article to evaluate the complex links between reforms and growth, these simple equations suggest that many cross-national studies using the EBRD's statistics have potentially substantially overstated the links between neo-liberal reforms and positive outcomes.

Conclusion

Before evaluating the importance of our findings we must address their limitations. First, our 'gold-standard' data on market reforms potentially incorporates bias from the domestic agencies which reported data to the EBRD. However, this enables us to pinpoint the bias introduced in the construction of statistics, while avoiding the difficult assessments about actual progress in market reforms during capitalist transition. Second, economic data are known to be unreliable in postcommunist countries, and the EBRD strongly cautions against their use for the early 1990's. But no matter how inaccurate these economic data may have been, they could have played a role in statistic-generating process. Not the least for these two reasons, we have not attempted in this paper to establish a 'truer' relationship between transition reforms and economic success.

Our analysis has shown that one major global knowledge agency, the EBRD, has systematically built economic success into its statistics of progress in market reforms. The longstanding, and as yet unresolved, debate on the quantitative effects of neo-liberal reforms has thus been, to some extent, rigged from the outset. These findings call into question hundreds of studies which have relied on *Transition Indicator* data for studying economic and social outcomes, as any findings will be identified in part by a significant institutional bias. Understanding differences in the extent to which studies have successfully corrected for self-fulfilling codings may help resolve the conflicting statistical findings about the effects of the neo-liberal approaches to capitalism.

We cannot rule out the possibility that this institutional bias operated sub-consciously or at the level of habitus among the EBRD bureaucracy, although we

found that the measures of economic success of focal interest to the EBRD, and the associated global financial elite, were strongly connected with over-coding successful countries but that other generalized measures of social welfare, such as mortality data, were not.

While the World Bank is to be applauded for allowing independent audits of some of their work, other global knowledge agencies, including the IMF and the EBRD, now need to follow suit, especially because these institutions receive public funding and claim legitimately to promote the public good. Theoretically, our work provides a further piece of modern empirical support for theorists such as Foucault on the intimate relations between knowledge (in this case statistics) and power (the neo-liberal hegemony). Scientifically, our findings issue a note of caution for those relying upon socially constructed policy indices for cross-national analysis.

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Figure 1a. Relationship between Actual Policy and EBRD Policy Indices

Small-Scale Privatization

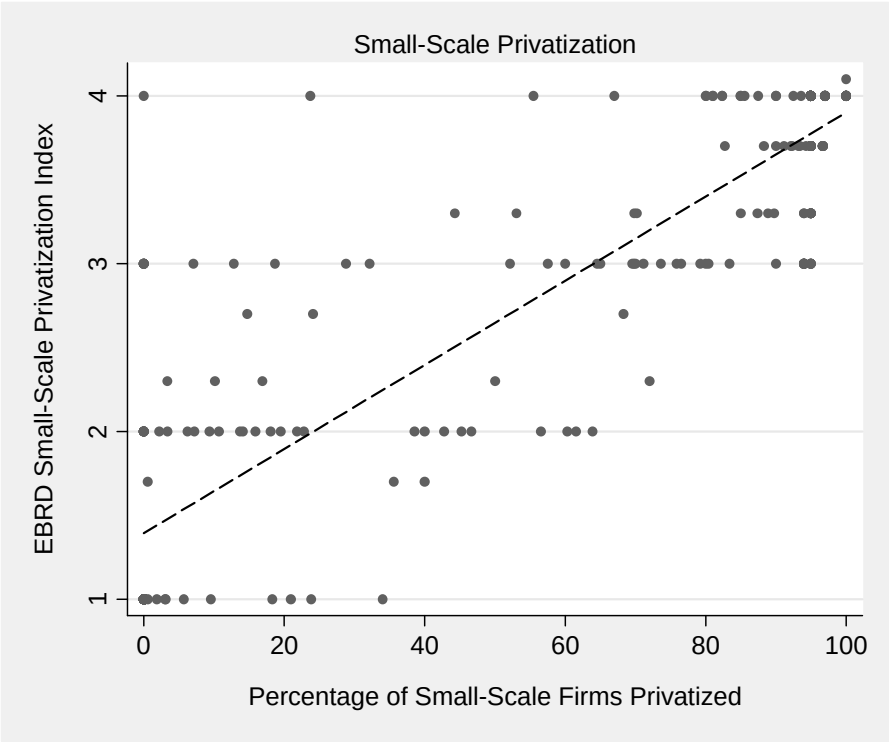

Figure 1b. Relationship between Actual Policy and EBRD Policy Indices

Large-Scale Privatization

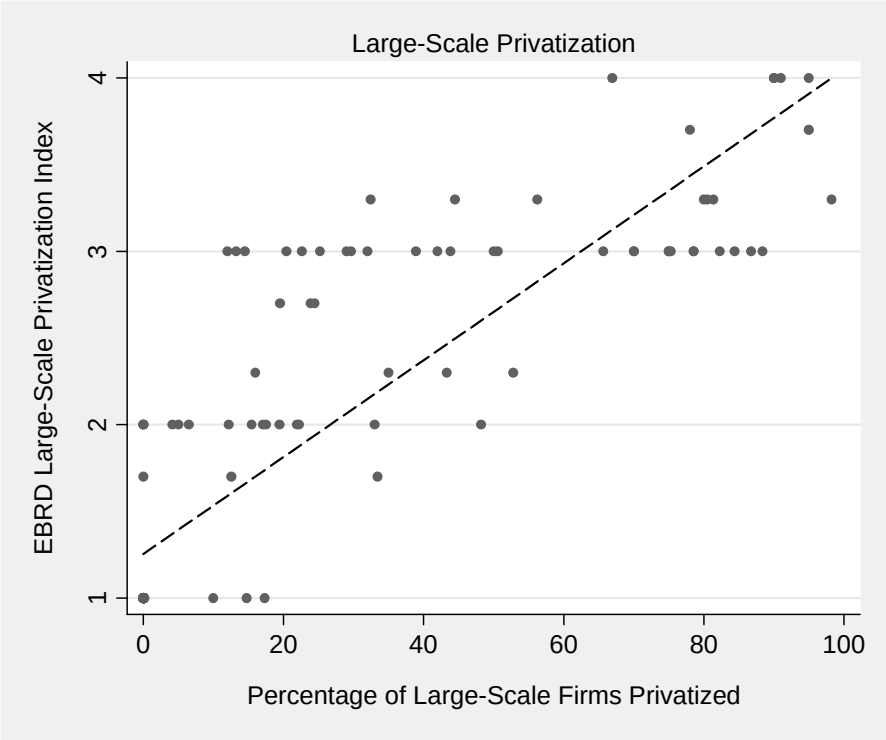

Figure 1c. Relationship between Actual Policy and EBRD Policy Indices

Price Liberalization

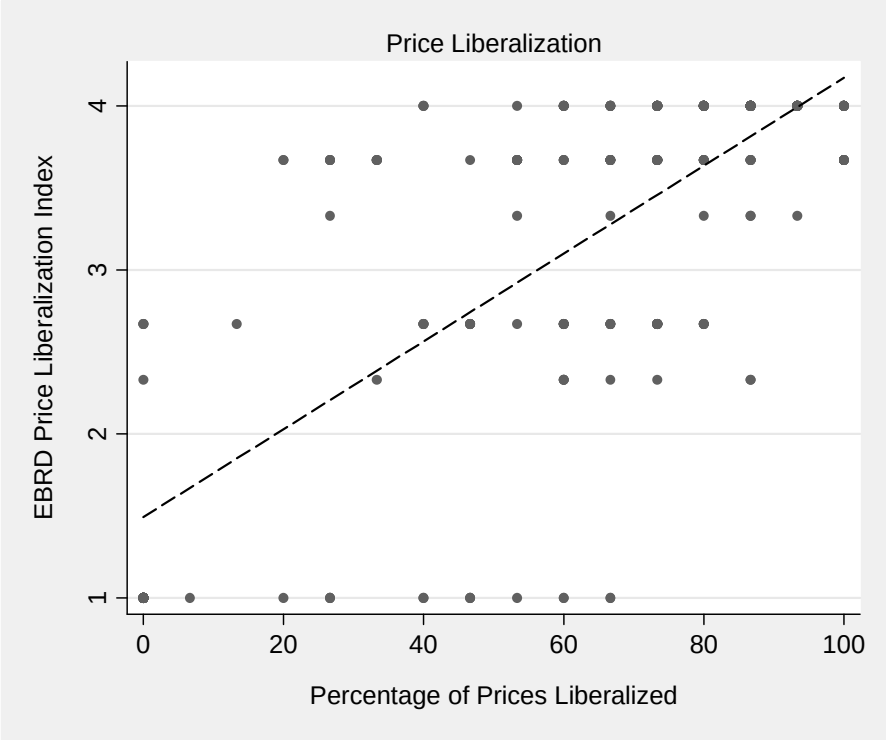

Table 1. Description of European Bank for Reconstruction & Development Capitalist Transition Indicators

Table 1. Description of European Bank for Reconstruction & Development Capitalist Transition Indicators	
Market Reform	EBRD Description of Coding
EBRD Small-Scale Privatization Index†	1 Little progress 2 Substantial share privatized 3 Comprehensive program almost ready for implementation 4 Complete privatization of small companies with tradable ownership rights 4+ Standards and performance typical of advanced industrial economies: no state ownership of small enterprises; effective tradability of land
EBRD Large-Scale Privatization Index†	1 Little private ownership 2 Comprehensive scheme almost ready for implementation; some sales completed 3 More than 25 per cent of large-scale enterprise assets in private hands or in the process of being privatized (with the process having reached a stage at which the state has effectively ceded its ownership rights), but possibly with major unresolved issues regarding corporate governance 4 More than 50 per cent of state-owned enterprise and farm assets in private ownership and significant progress on corporate governance of these enterprises 4+ Standards and performance typical of advanced industrial economies: more than 75 percent of enterprise assets in private ownership with effective corporate governance
EBRD Price Liberalization Index†	1 Most prices formally controlled by government 2 Price controls for several important categories; state procurement at non-market prices remains substantial 3 Substantial progress on price liberalisation: state procurement at non-market prices largely phased out 4 Comprehensive price liberalisation; utility pricing which reflects economic costs 4+ Standards and performance typical of advanced industrial economies; comprehensive price liberalisation; efficiency-enhancing regulation of utility pricing

Note: Data are scaled from 1 (planned economy) to 4.3 (advanced market economy. Definitions are quoted directly from the EBRD *Transition Report* series, available at http://www.ebrd.com/country/sector/econo/stats/sci.xls. The indices have remained largely unchanged since 1994 and have been backdated so that they assess the extent of transition from 1989 to the present. The EBRD website notes that, "Transition indicator scores reflect the judgment of the EBRD's Office of the Chief Economist about country-specific progress in transition" (EBRD 2009).

Table 2. Descriptives of 'Gold-Standard' Dataset

Table 2. Descriptives of Actual Policy Variables					
Variable Name	Definition	Obs	Mean (Std. Dev)	Min	Max
Small Scale Privatization	Percentage of small scale enterprises privatized	405	69.16% (39.41)	0%	100%
Large Scale Privatization	Percentage of large scale enterprises privatized	131	23.31% (31.55)	0%	98.26%
Price Liberalization	Percentage of State-controlled Prices liberalized in EBRD-15*	432	72.33% (28.06)	0%	100%

Note: * EBRD-15 is a basket of goods that includes 15 key consumer goods such as milk, bread, gasoline and transportation costs. Web Appendix 1 further describes sources of data.

Table 3. Relationships between EBRD Constructed Indices and Actual Data on Market Reform

Actual Market Reform Data	EBRD Reform Index		
	Small Scale Privatization	Large Scale Privatization	Price Liberalization
Percentage of Small Enterprises Privatized	0.027*** (0.00006)	—	—
Percentage of Large Enterprises Privatized	—	0.028** (0.001)	—
Percentage of Prices liberalized[a]	—	—	0.029*** (0.001)
Constant	1.369*** (0.050)	1.254*** (0.054)	1.441*** (0.081)
R^2	0.825	0.763	0.644

Notes: Standard errors in parentheses. [a] – prices liberalized are based on a bundle of 15 goods selected by the EBRD, including food and transportation. Similar results were found when specifying the constant to equal 1, or the 'planned economy' stage of the EBRD coding.

*- $p<0.05$ ** - $p<0.01$ ***- $p<0.001$

Table 4. Determinants of Deviations between Actual Reform Data and Constructed EBRD Indices

Table 4. Determinants of Deviations between Actual Reform Data and Constructed EBRD Indices			
Measure of Economic Success	Small-Scale Privatization	Large-Scale Privatization	Price Liberalization
Positive Growth in Previous Year	0.13** (0.05)	0.45*** (0.09)	0.21*** (0.06)
Negative Growth in Previous Year	-0.01 (-0.06)	-0.03** 0.09)	0.05 (0.07)
Previous Level of Log GDP per capita	0.18*** (0.03)	0.13 (0.08)	0.09** (0.03)
'Top 5' Average growth, 1991-1996	0.18** (0.06)	0.13 (0.11)	0.22** (0.07)
'Worst 5' Average growth, 1991-1996	-0.29*** (0.06)	-0.08 (0.09)	0.07 (0.07)

Notes: Coefficients presented from 15 models regressing the residual of the first-step model, EBRD Policy Index = α + βActual Policy + ε, on measures of GDP. Growth based on trends in GDP per capita in current USD. Standard errors in parentheses.

*p<0.05 ** p<0.01 *** p<0.001

Web Appendix 1. Data Sources and Sample

Small- and Large-Scale Privatization

Data on privatization are taken from the quantitative data reported in the text of the EBRD *Transition Report* series. We included quantitative data from the World Bank Europe and central Asia Privatization Database. For Albania, data points from AlbInvest, the state privatization agency, and the UN Economic Commission for Europe, were included. For Bulgaria, data from the Bulgarian privatization agency were included. For Lativa, data were taken from World Bank authors Soo Im and colleagues 1993, *Privatization in the republics of the former Soviet Union: Framework and initial results*, page 48, as part of the World Bank Private Sector Development and Privatization group.

Price Liberalization

All price liberalization data were taken from the EBRD. The main source was the text descriptions of progress in liberalizing prices out of the 15 goods tracked by the EBRD(flour/bread, meat, milk, gasoline/petrol, cotton textiles, shoes, paper, cars, television sets, cement, steel, coal, wood, rents, inter-city bus service). In cases of missing data, we included the raw data from the EBRD Structural and Institutional Change Data, found in the EBRD *Transition Indicators* Database.

Sample

Countries included in the sample were:
Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Web Appendix 2. Data points coded as 1, or no progress, by EBRD, despite significant actual price liberalization

Country	Year	Percentage of prices liberalized in EBRD-15 basket
Belarus	1991	60.00.
Bulgaria	1990	20.00
Kazakhstan	1991	66.67
Kyrgyzstan	1991	66.67
Moldova	1989	26.67
Moldova	1990	26.67
Moldova	1991	26.67
Romania	1990	6.67
Turkmenistan	1989	46.67
Turkmenistan	1990	46.67
Turkmenistan	1991	46.67
Turkmenistan	1992	53.33
Turkmenistan	1993	60.00
Ukraine	1992	40.00
Ukraine	1993	40.00

As an example of these mismatches, we spotlight two cases: Ukraine in 1992/1993 and Belarus in 1991

Ukraine
Source #1: EBRD Transition Report Text
1994 – "Price regulations have intensified since start of 1992, after price liberalisation in 1991"
1995 – "Comprehensive Reform programme was introduced in 1994. Before this period, pervasive price controls through whole economy. Majority removed with a few in monopolies. Further price adjustments in 1994-1995. Price controls remain only for bread, utilities and public transportation."

EBRD Structural Change Data

Year	Number Of Goods with Administered Prices (out of 15)	EBRD Price Liberalization Index
1989	15	1
1990	15	1
1991	15	1
1992	9	1
1993	9	1
1994	9	2.7
1995	5	3.7
1996	3	3.7

1997	3	4
1998	3	4
1999	3	4
2000	3	4
2001	3	4
2002	3	4
2003	6	4
2004	6	4
2005	6	4
2006	5	4
2007	5	4

Available at http://www.ebrd.com/country/sector/econo/stats/index.htm

Belarus

1994 "Producer prices liberalised in 1992, but ceilings on profit margins were put in place."
1995 "Large share of producer goods were liberalised since 1992, however ceilings on retail margins were introduced but these have since been removed. IMF agreements see most prices liberalised in 1994-1995."
1996 "Large number liberalized in early 1991, process of price liberalization completed in early 1995, though some controls still apply to bread and other food."

EBRD Structural Change Data

Year	Number Of Goods with Administered Prices (out of 15)	EBRD Price Liberalization Index
1989	15	1
1990	15	1
1991	6	1
1992	6	2.3
1993	6	2.3
1994	6	2.7
1995	6	3.7
1996	6	3.7
1997	6	4
1998	6	2.7
1999	6	2.3
2000	6	2.3
2001	6	2.7
2002	6	2.7
2003	4	2.7
2004	5	2.7
2005	6	2.7
2006	6	2.7

2007	7	2.7

Available at http://www.ebrd.com/country/sector/econo/stats/index.htm

Web Appendix 3. Representative Residual versus Predictor Plot, Small-Scale Privatization